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ABSTRACT

One of the most pernicious effects of stress is its effect on the ability of children and youths to function in the classroom. This study examined the factor structure of the Coping Resources Inventory for Educational Enhancement (CRISEE), an instrument designed to measure the coping resources and stressor load of children and youth. Participants were 1,546 students aged 10-16 from two ethnically diverse middle schools in the Southwest. Ethnicity was described as Latino, European American, African American, Mexican, Multiracial, Native American, Asian American, and Other. An exploratory factor analysis was conducted using tetrachoric correlations to estimate an unweighted least squares factor solution. This yielded a five factor solution for coping resources which replicated previous findings by W. L.Curlette and others. However, the external stressors scale did not emerge as unidimensionally distinct, which is discussed in terms of both methodology and theory. Implications for clinical interventions with children and youth in clinical settings and recommendations for further instrument development are also discussed. (Contains 1 figure, 7 tables, and 102 references.) (EMK)

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Exploration of Ethinicity and Coping Resources Among Middle Schoolers

Christopher J. McCarthy Anne E. Seraphine
University of Texas at Austin

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Christopher J. McCarthy and Anne E. Seraphine are assistant professors in the Department of Educational Psychology at the University of Texas at Austin. Both authors contributed equally to the preparation of this manuscript; order of authorship was determined alphabetically. Correspondence should be addressed to Christopher J. McCarthy, Department of Educational Psychology, SZB 262G College of Education Building, University of Texas at Austin, Austin, TX 78712-1296. E-mail: chris.mccarthy@mail.utexas.edu. FAX: (512) 475-7641. Presented in Carlson, C. I. (Chair), Risk and resiliency of minority youth in diverse middle schools. Symposium conducted at the Annual Meeting of the American Psychological Association, August 14 - 18, 1998.

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Abstract

This study examined the factor structure of the Coping Resources Inventory for Educational Enhancement (CRISEE), an instrument designed to measure the coping resources and stressor load of children and youth. Participants were 1,546 students from two ethnically diverse middle schools in the Southwest. An exploratory factor analysis was conducted using tetrachoric correlations to estimate an unweighted least squares factor solution. This yielded a five factor solution for coping resources which replicated previous findings by Curlette et al. (1993). However, the external stressors scale did not emerge as unidimensionally distinct, which is discussed in terms of both methodology and theory. Implications for clinical interventions with children and youth in clinical settings and recommendations for further instrument development are also discussed.

A recent survey in USA Today asked adults what age they'd like to remain for the rest of their lives if they could. Only 12% of the men and 16% of the women polled chose any age less than 15 ("I don't want to grow up", 1998). However, many adults still subscribe to the myth that the lot of children is idyllic; that their problems are inconsequential when compared to the weighty problems of adults. This misperception may stem in part from viewing childhood problems through the lens of adult coping resources. For example, research has demonstrated that a sense of control and mastery is essential in successfully combating the harmful effects of stress (McEwen & Stellar, 1993; Sapolsky, 1994; Strain, 1991). In all likelihood children experience far less control than adults, because many of their choices are made for them, often including where they will live, what they will eat, and how they will spend most of their day. However, parent ratings of the seriousness of stressors in the lives of their children at best are only moderately related to the ratings of their children (Beasley & Kearney, 1996). Consequently, stress has the potential to exact an exorbitant toll from children and youth which can often go unrecognized by the adults responsible for them.

Romano, Miller, and Nordness (1996) suggested that perhaps more than at any other time in the history of the United States, there is a growing disparity between the health and welfare of children and the rest of society. In the current period of economic boom the wealth of many adults has increased markedly; however, the welfare of many children and youth has deteriorated over the same period. While the United States ranks second in regard to per capita gross national product among industrialized nations, it ranks 19th in infant mortality and 8th in childhood poverty with 20% of children living below the poverty line (Janger, 1994). Because the poverty of children is related to parental divorce, there may be little improvement in the future as couples marrying in the 90s are predicted to have a 66% likelihood of divorcing at some point in their lives (Gottman, 1993).

One of the most pernicious effects of stress is its affect on the ability of children and youths to function in the classroom. The national rate of school dropout hovers between 25 and 30% (United States Department of Education, 1985). Academic stress has been referred to as the "invisible disability" (Hill & Sarason, 1966) and has been estimated to interfere seriously with the academic performance of an alarming 6 to 10 million children a year (Barker, 1987). The stress response interferes with cognitive processing and, thus, inhibits learning and memory (Khalsa, 1997).

Of course, the difficulties of today's youngsters extend far beyond classroom performance. Children and youth are increasingly beset by sources of potential stress

and alarming levels of risk behavior (Brabeck, Walsh, Kenny, & Comilang, 1997). In 1984, Green reported that adolescents comprised the only age group for which fatality rates were increasing and Basch and Kersch (1986) noted the rise in suicide, homicide, and unwanted pregnancy among adolescents over an entire generation. Benoit (1997) pointed out that 11% of teenage girls between the ages of 15 and 19 become pregnant each year. Also, the between psychosocial stress and illness appears to be as strong in children as it is in adults (Boyce & Jemerin, 1990). However, studies of stress in childhood and adolescence are inexcusably scarce compared to the enormous body of research regarding stress in adults (Matheny, Aycock, & McCarthy, 1993; Price, Jurs, Jurs, Rhonehouse, & Isham, 1985). Perhaps most telling, much of the research which has been conducted is based upon the judgments of clinicians, teachers, or parents made on the behalf of children (Yamamoto & Byrnes, 1987) with little or no input from the children themselves.

While the general public now seems to recognize that adults can experience harmful levels of stress in dealing with everyday demands (Wagenaar & LaForge, 1994), this awareness does not appear yet to extend to children and youths (Allen & Hiebert, 1991). Instead, much of the research has focused on identifying resilient children, that is, youngsters who are unusually capable of withstanding extreme hardship (Garmezy & Rutter, 1983; Johnson, 1986; Werner & Smith, 1982). Historically, such studies have been closely tied to developmental psychopathology (Masten, Best, & Garmezy, 1990), although Egeland, Carlson, & Sroufe (1993) have noted a recent shift from the study of risk variables to that of protective coping mechanisms and understanding how children negotiate risk situations.

It seems important to recognize that children's well-being extends beyond their risk of developing psychological disorders after exposure to extreme environmental deprivation or hardship. Like adults, children can be vulnerable to excessive levels of stress in simply negotiating the demands of modern living. Coping has recently been suggested as an organizing framework for understanding aspects of childhood and adolescent functioning including such domains as academic performance (Skinner & Wellborn, 1997) and emotion regulation (Glyshaw, Cohen, & Towbes, 1989; Saarni, 1997). Such an emphasis on prevention and wellness seems particularly consistent with the aims and practices of counseling psychology (Brabeck et al., 1997; Brown & Lent, 1992).

Professionals intent on assisting children and youth in coping with the strains of modern life will profit from accurate measurements of their coping resources which can serve as a useful predictor of how well children can meet life demands. However,

Mantzicopoulos (1990) pointed out that little has been done on the measurement of coping in children. The present purpose therefore is to examine the construct validity of a new instrument designed to measure both coping resources and external stressors in school-aged children, the Coping Resources Inventory Scales for Educational Enhancement (CRISEE) (Curlette, Matheny, Aycock, Pugh, Taylor, & Cannella, 1993). Although prior studies have indicated considerable promise for the instrument's validity (Davis, 1997, Thomas, 1993a; Thomas, 1993b), this is the first to use larger samples (1,000 or more) and an ethnically diverse sample. Because of the larger sample size, we were able to use methodology designed especially for the dichotomous responses (all answers are true/false) elicited by the CRISEE. Before presenting the results of this study, we will first discuss the theoretical framework which guided the development of this instrument and offer a rationale for the selection of its scales.

Theoretical Framework for the CRISEE

Early models of stress emphasized either the role of environmental stressors (Shinn, Rosario, Morch, & Chestnut, 1984) or the physiological adjustments required in confronting these stressors (Selye, 1976). However, over the past several decades increasing convergence has occurred among theorists and researchers towards a transactional model of stress (Cox, 1978; Folkman & Lazarus, 1988; Lazarus, 1966; Mason, 1975; Matheny, Aycock, Pugh, Curlette, & Cannella, 1986). These transactional models maintain that objective measures of potentially stressful events (e.g., change in employment status, loss of a loved one, academic demands) are weak predictors of stress symptoms because they discount personal reactions to these events. Accordingly, stress is hypothesized to result from an imbalance between appraised demands and appraised resources. Features of the demand (e.g., its intensity and the perceived consequences of failure to deal successfully with it) and of resources (e.g., their appropriateness and sufficiency) are taken into consideration in appraising the seriousness of the situation.

Hobfoll (1988a; 1988b) maintained that the focus of stress models should be directed mainly to the resource side of the equation. He argued that the measurement of coping resources would be more predictive of stressful reactions than the measurement of external demands. However, in spite of the obvious importance of perceived resources, few credible attempts to measure them have been made, either for adults (Matheny, Aycock, Curlette, & Junker, 1993) or for children (Mantzicopoulosm, 1990). Figure 1 represents a conceptualization of the critical role of coping resources in determining whether a demand will be perceived as a stressor.

Similar models have been proposed by Cox (1978) and Folkman and Lazarus (1988a); this re-conceptualization is based on research by Matheny et al. (1986; 1993) and McCarthy, Lambert, and Brack (1997).

Insert Figure 1 About Here

The stress literature has suffered for decades from imprecision in the use of terms (Seiffge-Krenke, 1995). Therefore, we will attempt to both explain Figure 1 and clarify our use of terms. At the far left of Figure 1, an individuals' awareness that a demand exists is represented. Demands refer to requirements imposed by self or others that are potential stressors. They may come from numerous sources, including role requirements, life changes, hassles, or self-imposed requirements. Awareness of demands is also hypothesized to be influenced by one's preventive coping resources. This distinction in coping resources was suggested by Matheny et al. (1986), who conducted a meta-analysis of the stress coping literature and proposed an integrated model which incorporates both preventive and combative coping. In their model, preventive coping is aimed at preventing potential stressors and building resources for resisting them. Antonovsky (1979) also referred to these as "generalized resistance resources" that can be useful in preventing demands from becoming stressors. Greenglass and Burke (1991) and Ogus (1992) have made similar distinctions. Matheny et al. (1986) distinguished preventive efforts at coping, which include peremptory buffering of resources which mitigate or minimize the initial impact of stressors, from combative forms of coping, which involve active or passive attempts to deal with a stressor that has already occurred. McCarthy, Lambert, and Brack (1997) found a differential role for the impact of preventive and combative types of coping resources on emotions experienced after relationship breakup with adults. Specifically, using the CRIS as a measure of coping resources, it was found that preventive coping resources such as self-directedness, a belief in one's ability to make good decisions, and confidence, reliably predicted the immediate emotional toll of the breakup. In contrast, combative types of coping resources, such as tension control and social support, were important predictors of emotions experienced weeks or months after the breakup. Aspinwall & Taylor (1997) suggested that the importance of preventive coping has often been underestimated, in part because the effects of preventive efforts are often unrecognized; hard work which prevents a crisis usually receives far less recognition and is often harder to define than successful efforts at combating a stressful event which has already occurred (combative coping will be

further clarified in the following paragraphs).

As can be seen in Figure 1, awareness of the presence of a demand is followed by an appraisal of it's potential threat. Folkman and Lazarus (1980) were among the first to distinguish between primary appraisals made about the seriousness of a demand and secondary appraisals of one's coping resources. If the primary appraisal about the seriousness and nature of a demand is perceived to be roughly equivalent to, or less than, one's secondary appraisal of their coping resources (represented in the figure as $R \geq D$), demands are viewed as challenges and energize the person for optimal functioning. If, however, the demands are perceived to exceed the person's coping resources ($R < D$), the demands become stressors and trigger the stress response (see Figure 1), which is defined as the syndrome of neurological and biochemical changes the body undergoes when confronted with stressors. Stress symptoms refer to a myriad of stress-endpoints including physiological, behavioral, and psychological components (depicted at the bottom of Figure 1). If stressors are chronic, they can lead to a host of psychophsiological disorders, including hypertension (Amigo, Buceta, Becona, & Bueno, 1991), ulcers (Sherman, 1994), and immune suppression (Antoni, 1987).

Once the stress response has occurred, the individual usually taps their reservoir of combative coping resources in an attempt to find coping strategies which can lessen their experience of the stress response and change the situation which is causing stress. Combative coping resources were defined by Matheny et al. (1986) as those that tend to be drawn upon to alter or mitigate a stressor that is already being experienced, and coping strategies (or responses) are behaviors that occur *after* stressors have been engaged (Perlin & Schooler, 1978). Coping strategies have also been further distinguished in the literature as problem-focused (or active) and emotion-focused (or passive) (Carver, Scheier, & Weintraub, 1989). In our framework, problem-focused strategies are aimed at influencing the nature of a demand whereas emotion-focused coping strategies are aimed at eliminating or lessening the stress response (see Figure 1).

According to this model, then, the secret for healthy functioning is to build adequate coping resources and to acknowledge possession of them. The shadowed rectangles in Figure 1 represent constructs measured by the CRISEE (coping resources and stressors). Confidence in one's coping resources creates a sense of control, and a sense of control is said to be the most effective buffer between potential stressors and stress symptoms (Antoni, 1987; Goleman, 1994; McCabe & Schneiderman, 1985; Sapolsky, 1994). As we noted previously, children and youths

may experience less control over their worlds than adults. Their coping resources may be less well developed, and their homes, schools, and communities are often run by adults who underestimate the terrors of growing up. The key then is perception: the student's perception, not the perceptions of parents, teachers, or counselors.

Early stress instruments, including those developed for children and youth (Coddington, 1972), were measures of the cumulative effects of life events (Dohrenwend & Dohrenwend, 1974; Holmes & Rahe, 1967; Marz, Garrity, & Bowers; Monaghan, Robinson, & Dodge, 1979; Sarason, Johnson, & Siegel, 1978). Because such measurements ignored the respondent's subjective appraisals, correlations of life events with stress symptoms, such as illness, were quite modest - usually in the .2 to .3 range (Rabkin & Struening, 1976). While later efforts attempted to take the respondent's perception of major life events into consideration (Derogatis, 1987; Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978), all of these measures only attended to one-half of the stress equation - namely, the measurement of perceived demands.

Other instruments, again mainly developed for adults, have focused on coping strategies, rather than coping resources (Carver et al., 1989; Folkman & Lazarus, 1988b; McCrae, 1984; Schutz, 1962; Stone & Neale, 1984). As indicated in Figure 1, coping strategies are behaviors that occur after stressors have been engaged (Pearline & Schooler, 1978). While the use of coping strategies can be an important component of adjustment, acquiring and developing sufficient levels of coping resources is important because they are useful before stressors occur and can help lessen or negate the costs of dealing with demands (Wheaton, 1983).

Several instruments have been developed in recent years to measure adult perceptions of coping resources. Moos, Cronkite, Billings, & Finney (1985) developed the Health and Daily Living Form, which measures multi-dimensional aspects of adaptation, including stressors, symptoms, and coping. Hammer and Marting (1988) developed the Coping Resources Inventory to measure five resources, cognitive, social, emotional, spiritual/philosophical, and physical, and reported adequate psychometric properties. One of the most comprehensive measure of adult coping resources to receive empirical support is the Coping Resources Inventory for Stress (CRIS; Matheny, Curlette, Aycock, Pugh, & Taylor, 1987), which yields 37 scores: an overall coping resources effectiveness score (CRE), 12 Primary scales, 3 Composite scales, 16 Wellness Inhibiting items, and 5 validity keys. The CRIS scales reflect the results of extensive literature reviews (Matheny et al., 1986), two meta-analyses of the effectiveness of coping resources (Cannella, 1987; Matheny et al., 1986), and seven

factor analyses of its items (Curlette, Aycock, Matheny, Pugh, & Taylor, 1992).

While theoretical models of stress and coping with adults, and the instruments developed to measure these constructs, have drawn sharper distinctions between internal resources and external demands, empirical evidence has not yet shown that this distinction holds as well with younger individuals. Analyzing children and adolescents' perceptions about the source of their stress is receiving increasing research interest (Compas, Worsham, Ey, & Howell, 1996; McDonald, Gregoire, Poertner, & Early, 1997) and there is some evidence to suggest that children's perceived stress can have both internal and external sources. For example, Sorensen (1994) used semistructured dairies to analyze the stressors experienced by rural and urban children, and found a difference between internal, cognitive-intrapsychic sources of stress and external, environmental sources. Interestingly, rural children reported greater levels of internal stressors and suburban children greater external stressors. Once again, there can be a tendency for adults to mistakenly generalize their sense of control to children - in this case, their sense of control over their own thoughts, feelings, and behaviors. In other words, children may not understand, at least to the extent that adults do, why they think, feel, and behave as they do, a situation which could itself cause stress.

The CRISEE was developed by Matheny et al. (1993) using the same theoretical framework as the CRIS. While previous research has indicated promise for the psychometric properties of the CRISEE, they have been conducted with predominantly European American, middle class samples of children. Therefore, the present study was conducted to (1) determine the psychometric properties of the subscales when administered to a sample of diverse middle school students, (2) test whether the constructs of distinct coping resources and external stressors would be supported, and (3) explore possible differences on CRISEE scales for gender, ethnicity, and grade level.

Method

Participants The participants were 1,546 middle schoolers in a suburban school district in the Southwest. Approximately one third were in each of the three grades. Participants ranged from ages 10 to 16 (M = 12.7, SD = 1.14); 49% were females (n = 760) and 51% were male (n = 786). The participants described their ethnic backgrounds as Latino/a (n = 660), European American (n = 363), African American (n = 225), Mexican (n = 99), Multiracial (n = 79), Native American (n = 17), Asian American (n = 15), or Other (n = 16).

Procedure As part of a schoolwide survey, the data for this study were collected

during one day in each of the two schools. During social studies classes, each student was given a questionnaire to fill out. If students did not wish to complete the questionnaire, they were instructed to leave it on their desk and turn it in blank at the end of the period. In this manner, no attention was drawn to students who did not want to complete the questionnaire. If the parents had stated that they did not wish the student to participate, the students were removed from the room before distributing the questionnaire. Confidentiality was assured to all participants. No members of the staff at the school had access to the data except in the form of frequencies data for the school.

Instrumentation The CRISEE was designed to measure both the stressor load and coping resources of children and youth. The initial development of the instrument occurred in three stages (Curlette et al., 1993). First, the developers constructed the original pool of items on the basis of an extensive review of the literature regarding stress and coping in children (Matheny, et al., 1993). Next, a factor analysis was conducted to identify the subscales and reduce the number of items per subscale by eliminating items that either failed to load on any factor or loaded on more than one factor (Curlette, et al., 1993). Finally, to reduce the number of items further, a second factor analysis was conducted by using BMDP 4M for Principle Factor Analysis with DQUART as the method of rotation. Based on a scree test, six factors were extracted (Curlette et al., 1993). Items were eliminated at this point either because they loaded on more than one factor (indicating the item was multidimensional) or because they failed to load on any factor. On the basis of the content of the remaining items, the six factors were identified as Social Confidence, Behavior Control, Peer Acceptance, Academic Confidence, Family Support, and Responsibility. The sixth factor, Responsibility, had only seven items which loaded with values of .30 and above. The factor and the scale derived from it were viewed as tentative until its validity could be clarified with further research.

The final version of the CRISEE is made up of 99 true/false items which are totaled to yield scores for each of the coping resources measured. Two of the items (items 62 and 65) are used to assess response validity, whereas the remaining 97 are combined to form seven scales, as indicated by Table 1. Some items are reversed coded. Higher scores on the coping resource scales reflect higher levels of those attributes. All of the Stressor (ST) items are reverse scored so that higher scores on that scale reflect lower levels of external stress. The seven scales are academic confidence, social confidence, family support, peer acceptance, behavior control, responsibility, and stressors. Curlette et al. (1993) reported the reliability for each of

the six scales, which are depicted in Table 1 along with the items which are associated with each scale (the content of each item will be clarified in Table 4).

Insert Table 1 About Here

The six coping resources scales are further described next, as well as the stressor and tracking items:

Behavior Control (BC). Students who score high on Behavior Control generally are cooperative and seldom create problems either in their schools or their communities. They seldom break rules, pick on other students, or get into fights. They usually handle their anger in a socially appropriate manner and usually maintain positive relationships with their teachers.

Peer Acceptance (PA). High scorers on Peer Acceptance usually feel liked and accepted by other children. They report that other children like them, treat them well, and like their appearance. They make friends easily and get along well with others.

Social Confidence (SC). High scorers on this scale report that they freely disclose their feelings and opinions, are assertive in negotiating their needs, relate comfortably with peers, and behave independently of others when appropriate. Consequently, such students should move freely among other children and youth and actively seek opportunities to be with them. They are more apt to attend extra-curricular activities than students who are less socially confident.

Academic Confidence (AC). Students scoring high on this scale report that they feel confident of their ability to do well in school, have good time management skills, and do quality work. These students are more apt to earn good marks in their schoolwork than students with low scores on the scale.

Family Support (FS). Students who score high on family support report that their families are supportive, accepting, and helpful. Such families help their children with homework and problem-solving, spend time with them, and listen to them. Such students generally feel happy and secure and have a sense of belonging at home.

Responsibility (RS). This is an experimental scale and presently should be used in research only. Students who score high on responsibility report that they are cooperative and willing to follow directions. They recognize the expectations of parents and teachers and attempt to meet these expectations.

They apply themselves seriously to assigned tasks and are diligent in their completion.

Stressors (ST) Stressor items are composed of events experienced by students in their schools, social environments, and personal lives. Items included on the Stressor Scale were representative of previous research on childhood stressors (Yamamoto, & Bymes, 1984; 1987; Yamamoto, Soliman, Parsons, & Davies, 1987; Youngs, Rathge, Mullis, & Mullis, 1990) along with teacher observations. A high score on this scale suggests that the student is experiencing a significant number of stressful events. These events make adaptive demands and may contribute to emotional upheaval and/or disruptive behavior on the part of the student.

CRISEE Tracking Items In an effort to determine the validity of the student's responses to this inventory, a pair of items was placed in the test to track the student's responses. The items are number 62, "I am more than five years old," and number 65, "I have passed the first grade." The validity of responses to the entire test should be viewed as questionable if a student answers FALSE to either of these items. FALSE answers may be the result of (1) inability to read the test items, (2) getting off the proper number when recording answers, or (3) failure to take the inventory seriously. Whatever the reason, the inventories of students who do not pass the tracking items are probably invalid and should be interpreted with extreme caution.

Previous research has offered support for the criterion-related validity of the CRISEE. Arnold (1992) studied the relationship between the coping resources of school children and their self-esteem, locus of control, and degree of anxiety experienced. In her study, 557 public school students in grades 1, 4, and 8 completed four instruments. She investigated the relationships among the four instruments: version 2 of the CRISEE (135) items, the Children's Nowicki-Strickland Internal-External Control Scale (abbreviated), the Piers-Harris Children's Self-Concept Scale, and the Revised Children's Manifest Anxiety Scale. Table 2 below presents an intercorrelational matrix of scores from these instruments.

Insert Table 2 About Here

The results of the study suggested that coping resources (as measured on the CRISEE) had a positive correlation with self-esteem and internal locus of control and a negative correlation with anxiety. Arnold (1992) found significant gender differences

on the Behavioral Control scale only, with girls reporting significantly higher resources for controlling their behavior than did boys. This result is consonant with other studies which have found boys to have less impulse control than girls (Block, 1983).

The trend of the CRISEE scores across the three grade levels indicated that coping resources and self-esteem decreases were statistically significant from first to fourth grade and then from fourth to eighth grade. These results were congruent with those reported by Allen and Hiebert (1991) who found that tenth grade students reported more effective coping than eleventh grade students who in turn reported more effective coping than twelfth grade students. As noted by Allen and Hiebert, researchers such as Folkman and Lazarus (1980) have suggested caution in interpreting such results, which they suggest could be due to increases in stressor loads as one gets older, rather than actual decreases in coping resources.

Analysis An exploratory factor analysis was conducted to answer the first two research questions in our study. The two validity items and the 9 responsibility items in the CRISEE were excluded from the present analysis. The responsibility scale is experimental and still under revision, so it would have been premature to include it. To assess the dimensionality of the remaining 92 items of the CRISEE we applied the unweighted least squares factor procedure to a tetrachoric item matrix. Few effective options are available to assess the dimensionality of binary data (Mislevy, 1986). The more common procedures include maximum likelihood full information factor analysis of item responses implemented by TESTFACT (Bock, Gibbons, Muraki, 1988); the weighted least squares procedures implemented by PRELIS2/LISREL8 (Joreskog & Sorbom, 1993) or LISCOMP (Muthen, 1987); the maximum likelihood (ML) estimated solution of tetrachoric correlations, and the unweighted least squares (ULS) estimated solution of tetrachoric correlations. Commonly, researchers assess the dimensionality of binary data by estimating a ML or ULS factor solution from a Pearson-product moment correlation matrix, known by many as a phi correlation matrix. But McDonald and Alhawat (1974) have warned against the practice of using of phi correlations if the data is binary, because it often leads to over-factoring, resulting in difficulty interpreting factors.

Neither TESTFACT nor the WLS options were viable options. First of all, TESTFACT allows for the estimation of only five factors, whereas we expected as many as six factors to emerge. Secondly, our sample size was too small for the implementation of the weighted least squares methods. We selected ULS rather than ML, because the chi-square statistic associated with the ML procedure often is overly sensitive to negligible discrepancies in model fit when the sample size is large. As a

result, the use of the statistic often leads to over-factoring (Basilvesky, 1993). Because we wished to avoid difficulty factors we applied ULS to a tetrachoric correlation matrix. We estimated the tetrachoric correlation matrix by using TESTFACT (Wilson, Wood, & Gibbons, 1991) and the ULS factor solution by using SAS-v6.12.

The ultimate aim of a factor analysis is to determine the number of factors or dimensions underlying the relationship among items. It is assumed each factor corresponds with some specified psychological construct. Furthermore, it is assumed this construct can be measured or quantified by administering a scale that comprises the items associated with the appropriate factor or dimension. It follows then that the score resulting from the scale reflects whether the examinee has more or less of the construct than others. Because of this, the item responses should exhibit a factor structure that reflects the configuration of an instrument's scores associated with each scale. Messick (1995) termed this match the "structural fidelity" of scores. Structural fidelity is central to establishing the construct validity of any psychological instrument, such as the CRISEE.

To answer the third research question, we conducted three separate Multivariate Analysis of Variance (MANOVAs) to assess for possible differences on the CRISEE subscales: gender, ethnic group, and grade level, respectively, were the independent variables in each.

Results

To determine the number of factors to extract we used a scree plot. A scree plot graphically displays the relationship between eigenvalues and factors. The cutoff point for factor extraction is placed at the elbow of the graph. Typically, the elbow is located where the rate of change in eigenvalue differences drops precipitously, resulting in a consistency of negligible eigenvalue differences for subsequent factors. To set the axes of the factor structure, we performed a promax (oblique) rotation of the initial solution. The factor loadings may be interpreted as regression coefficients of the item responses on the factor or construct. Based on a recommendation by Stevens (1992), a factor loading was considered to be salient or significant if its value exceeded a .4 cutoff. The correlations among the factors indicate the degree to which the constructs are interrelated.

Principal factor analysis was performed using the 92 items from the CRISEE and after inspecting the scree plot, we extracted five factors, which accounted for 74% of the variance. Table 3 shows the first ten eigenvalues and their respective differences.

Insert Table 3 About Here

On the basis of the magnitude of the eigenvalue differences, we determined the location of the elbow to be somewhere between eigenvalues 5 and 6. Following a promax rotation, the saliency of the factor loadings was determined, as shown in Table 4.

Insert Table 4 About Here

An inspection of Table 4 reveals that the rotated factor solution upholds the integrity of five scales: Behavior Control (BC), Peer Acceptance (PA), Social Confidence (SC), Academic Confidence (AC), and Family Support (FS). By using only the items that had a salient factor loading on a single factor, we constructed five factor based scales. As might be predicted for a scale measuring a loose collection of external events, the integrity of ST was less than perfect. The responses to the items simply lacked consistency, resulting in items that did not load at all or loaded on one of the factors associated with the items of PA or BC. Lower scores on the ST scale reflect higher levels of external stress. Since all of the ST items which loaded on the BC or PA scales had positive values, this would indicate that higher levels of coping resources were associated with lower levels of external stressors. For ST items that loaded on either PA or BC, their behavior can be explained on the basis of their content, which is considered in greater depth in the discussion section.

Table 4 also shows that several items originally associated with scales other than ST also failed to load on the expected factor. For instance, the items 39, 52, 53, 54, and 56 failed to load on the expected factor or any other factor. Yet, all of the items had at least one loading with a magnitude that fell somewhere between .30 and .40. In other words, such items exhibited moderate sized loadings. And at least one of these moderate sized loadings is associated with the factor representing the item's original scale. For example, items 39, 52, and 54 each had two moderate sized loadings, one of which is associated with that item's original scale. Items 53 and 56 had only single moderate loadings, each associated with the item's original scale. One reason these loadings failed to reach significance may be a function of sampling. Replications of this study with larger and different samples are needed to explore this issue further.

Other than the ST items, only 3 items, 35, 60 and 66, drifted from one scale to

another as the result of the factor analysis; items 35 and 60 both shifted from the FS scale to the SC scale. Table 5 includes the inter-factor correlations for the five scales.

Insert Table 5 About Here

Only two pairs of factors exhibit moderate correlations (r = .40 and above): factors 2 and 3 and factors 4 and 5. That is, PA/ST and SC are moderately related as are AC and FS. But theoretically and empirically it is implausible that the factor intercorrelation matrix would support one or more higher order factors. Table 6 shows the items and reliabilities that are associated with each of the newly constructed factor based scales.

Insert Table 6 About Here

A comparison of these reliabilities with the ones associated with the original scales (Table 1), shows that the new reliabilities differ only slightly from those reported by Curlette et al. (1993).

Finally, we conducted three separate Multivariate Analysis of Variance (MANOVAs) to assess for possible differences on the CRISEE subscales: gender, ethnic group, and grade level, respectively, were the independent variables in each. There were no significant differences for gender or ethnic group on any of the factors. However, a significant main effect was found for grade level ($F(10, 2836) = 3.38$, $p <$ 001). Post-hoc univariate F tests showed significant differences by grade level for FS 2 (PA/ST) (F (2,1421) = 8.15, $p < .001$), FS 3 (SC) (F (2,1421) = 3.30 , $p < .05$), and FS 4 (AC) (F (2,1421) = 3.20 , $p < .05$). Post-hoc univariate tests and Tukey's Studentized Range (HSD) pairwise comparison revealed that for FS 2 and FS 3, scores were higher on the coping resources scales as grade level increased, but for FS 4, scores were lower on the coping resources scales as grade level increased. Means and standard deviations for these factors are provided in Table 7.

Insert Table 7 About Here

Inspection of the R^2 values for the univariate tests reveals that the amount of variance accounted for was small in all cases. For FS 2 (PA/ST), R^2 = .01, for FS 3 (SC), R^2 = .005, and for FS 4 (AC), R^2 = .004.

Discussion

Given the social, economic, and political trends evident at the close of the 20th century, it is likely that children and adolescents will continue to face tremendous changes never imagined by their parents or grandparents as youths. Although it is impossible to predict exactly what changes these might be, the literature strongly suggests that adequate coping resources are a necessary prerequisite to successful adjustment in younger individuals (Cowan, et al., 1996). The model proposed in Figure 1 indicates the central role that coping resources may play in determining first, whether a demand will be experienced as a stressor, and second, how successful the individual will be in handling the stressor. As we have indicated, there is currently a paucity of empirically supported measures available for professionals seeking to help children and youth in coping with the strains of modern life (Price et al., 1985; Yamamoto & Byrnes, 1987), which seems essential for interventions which recognize the differences in stress coping processes between youths and adults. Previous research has demonstrated support for the validity of the CRISEE and the results from the current study provide further evidence that the CRISEE may be a reliable measure of dimensionally distinct types of coping resources and stressors.

In discussions about validity, Messick (1995) has emphasized the role of structural fidelity in establishing test score validity. Structural fidelity is evident when the structure of scores of subscales corresponds to a similar factor structure. In other words, each score should represent a subscale that is unidimensional and taps a different dimension than the other subscales. The factor analysis conducted in this study supported the structural fidelity of the CRISEE coping resource subscales: all five of these scales included in the analysis were unidimensional and tapped distinct dimensions or factors. The Stressor scale (ST) was the only scale not well supported as a distinct dimension. The ST items either loaded on the Behavior Control (BC) scale or Peer Acceptance (PA) or failed to load on any scale.

One explanation is that the ST scale may simply represent a loose collection of troublesome events which are not closely related enough to form a unidimensional scale. Alternatively, these results might provide support for previous findings that children's perceived stress can have both internal and external sources (Sorensen, 1994) - in other words, the distinction between external demands and internal resources is not as clear for children and youth as it is hypothesized to be in adults. Most adults, with some obvious exceptions like those afflicted with debilitating physical conditions, view sources of stress as originating outside of themselves (Matheny et al., 1986). However, as suggested by Beasley & Kearney (1996), children may not

entirely share this perception.

For example, the majority of the ST items which loaded on coping resource factors did so on the Behavior Control (BC) factor (ST items 86, 87, 92, 93, 94, 98). Examination of these items, as depicted in Table 4, suggest that the respondents may have interpreted the content of these items in one of two ways. Either the item was perceived as referring to potential external stressors, as intended, or it was perceived as referring to the direct consequences of the child's ineffective behavior control, which results in a muddying of external demands and coping resources. Such a condition may be most likely to arise when the source of a stressor is highly dependent on the respondent's interactions with others in various contexts, such as at home or at school. For instance, two different scenarios may lead to affirmative responses to ST items such as 86 (students try to hurt me), 93 (people often yell at me), and 94 (much fighting in my neighborhood). On the one hand, the respondent through no fault of their own may find themselves surrounded by hostile fellow students and in this case would likely respond to these items as external demands or stressors. On the other hand, if the respondent lacks behavior control and is regularly involved in fights, they might respond to these items as direct outcomes of their lack of behavior control. In this case, the students' coping resources are directly related to items originally constructed to reflect external events not under the control of the student. ST items that load on the Peer Acceptance (PA) scale could be similarly construed: for example, items 84 (students take things from me), 89 (frequently picked last on a team), and 95 (students tease me) could have been interpreted as direct outcomes of the students' inability to get along with others, rather than as external events.

In contrast to the items which loaded on coping resource scales, inspection of the ST items which did not load on any of the coping resource scales might suggest that these items referred to external types of stressors. A few examples of external ST items are 88 (moved last year), 90 (left alone a lot), 96 (have scary dreams), 97 (held back a grade), and 99 (frequently get lost). Because these items failed to load on any factor, it is probably unwise to classify them as any particular type of stressor, except in a loose sense. When items fail to load on any one factor, one can be fairly sure the responses to these items lack consistency with one another. In the strictest sense one can then think of each item as its own independent factor. In some respects, because the external ST items are externally produced, we would expect each to operate somewhat independently of the other. In other words, we believe a true external ST scale will behave not as a cohesive scale, but as a group of demographic items, each separate and important in their own right. In this case, we believe it is perfectly

appropriate to tally the external ST items to get the number of perceived stressors. Such a tally is line with the developers' intent for the ST scale (Curlette et al., 1993).

Therefore, a key to understanding why 11 out of 18 of the stressor items load on either the PA or BC factor may be to make the distinction between externally produced stressors and internally produced stressors (Sorensen, 1994). Externally produced stressors are perceived by children to occur independently of their actions, whereas internally produced stressors are perceived to occur as a direct consequence of their own actions. This may suggest some revision in the role of preventive resources presented in Figure 1. Preventive resources with adults mainly refers to personal assets useful in preventing some type of external demand (Ogus, 1992). However, with children preventive resources may also be conceptualized as those which prevent the child from creating their own demands - for example, by starting fights with others.

Even with this distinction, we are still faced with the problem of finding a way of eliciting responses where the respondent makes the distinction between internally produced stressors and coping resources. One possibility lies in the ordering of items. Before responding to any ST items on the CRISEE, the participants responded to 79 coping resource items. It may be that the intensity and duration of exposure to coping resource items contaminated their perceptions of the ST items. It could be the confusion between the ST and coping resource items is simply due to item ordering, or it could be that middle schoolers are unable to perceive the distinction between the two types of items.

Given our findings, however, we question the inclusion of the internal ST items in the tally of external stressors. At this point, it is unclear whether the sum of internal ST items provides an accurate picture of the extent to which the respondents perceived events as external demands. Our results suggest that the middle schoolers might have consistently perceived the internal stressors as related to their coping resources. If these findings are replicated in other studies, it is likely the ST score over-estimates the degree to which events are interpreted as demands. More work needs to be done in understanding how to measure stressors that children perceive to be internally caused and how to disentangle these responses from externally-based events. One possibility is to administer the ST items at the beginning of the instrument, exposing the respondents to these items first, perhaps preventing contamination from the coping resource items.

Beyond these suggestions for the ST scale, a number of limitations were present in our study which can be addressed in future research. Obviously, further

studies are needed to evaluate the experimental Responsibility coping resource scale on the CRISEE, which was not used in this study. In addition, it will be important for further research to evaluate the validity of the CRISEE with diverse samples, including such factors as ethnicity, gender, and grade level. We found only partial support for Arnold (1992) and Allen and Hiebert's (1991) finding that coping resources decrease across grade levels, at least for the middle schoolers in our sample - increases were found across grade levels for FS 2 (PA/ST), FS 3 (SC), with FS 4 (AC) the only scale found to decrease from Grade 6 to Grade 8. Further investigation of this phenomena is clearly warranted, but these mixed finding across grades with respect to coping resources may in part support the contention of Folkman and Lazarus (1980) and our discussion of the loadings of the ST items that youths' perceptions of resources and demands are at least in part a function of age.

Beyond further refinement of the CRISEE, we believe additional research is necessary on developing comprehensive models of children's stress coping processes. While we included coping resources from the CRISEE as part of Figure 1, the development of that model is mainly based on research with late adolescents or adults, and more research is needed to evaluate it's applicability to children and youth. Specific propositions made in the model presented in Figure 1 could be also be conducted with children and youth, potentially including the CRISEE as a measure of coping resources and stressors. As noted previously, McCarthy et al. (1997) found a differential role for preventive and combative forms of coping in adults, and it remains to be seen whether similar distinctions would be supported in research using instruments such as the CRISEE with children.

Regarding the clinical significance of these results for work with school-aged children, the implication of lower scores on some scales seems obvious; for example, children with lower scores on Behavior Control may be more likely to get into trouble with authorities both in school and at home. Children with lower Academic Confidence would also seem to run a greater risk of encountering difficulties in educational settings. Perhaps less obvious to adults might be the importance of the child's perceived social environment to successful adjustment. Research suggests that a child's social competence may facilitate adaptation to a variety of stressors associated with a chronic illness (Sanger, Copeland, & Davidson, 1991) and therefore Social Confidence may be an important predictor of adjustment across a number of different contexts. Peer Acceptance may be an important determinant of successful coping because social support from peers has been shown to strengthen a child's ability to cope with stressful conditions (Varni, Katz, Colegrove, & Dolgin, 1994).

Garmezy (1987) discovered that positive engagement with peers was one of the critical attributes of stress-resistant children. Finally, students who score high on family support report that their families are supportive, accepting, and helpful. Perceived parental warmth is associated with greater use of social support and problem-focused coping on the part of children (McIntyre & Dusek, 1995). Parental support also seems to lessen the rate of sexual revictimization among young women (Mayall & Gold, 1995) and to decrease adjustment problems among children under duress (Wolchik, Sandler, & Braver, 1987; Garmezy).

Overall, our findings suggest that the CRISEE scales may provide meaningful, relevant, and interpretable scores. Only the ST score should be interpreted with caution, as discussed earlier. Further research is necessary to further evaluate the psychometric properties of the instrument, but at this point there is reason for cautious optimism that the CRISEE will be useful both as a clinical tool and as an assessment instrument for investigations of stress coping processes in children.

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Table 1

CRISEE scales and reliabilities (from Curlette et al., 1993)

Scales	Reliabilities	Items
Academic Confidence (AC)	.83	1, 8, 14, 20, 26, 30, 34, 36, 39, 44, 48, 52, 72, 79
Family Support (FS)	.82	2, 3, 16, 18, 23, 27, 33, 35, 42,53, 57, 60, 71
Peer Acceptance (PA)	.85	7, 9, 15, 29, 41, 43, 51, 54, 61, 66, 70, 80
Behavior Control (BC)	.83	4, 11, 13, 19, 22, 25, 38, 40, 45, 49, 58, 63, 68, 74
Responsibility (RE)	.71	5, 17, 32, 47, 55, 67, 69, 73, 75, 81
Social Confidence (SC)	.81	6, 10, 12, 21, 24, 28, 31, 37, 46, 50, 56, 64, 76, 78
Stressors (ST)	.76	82 – 99

Table 2

Correlations of the CRISEE with Other Instruments (from Arnold, 1992)

	PHCSCS	RCMAS	CNSIECS-A
CRISEE	79*	-.61*	-.50*
PHCSCS		-.66*	-.46*
RCMAS			.52*

Note. *$p < .05$. Higher scores on the CRISEE indicate more resourcefulness; higher scores on the Piers-Harris Children's Self-concept Scale (PHCSCS); higher scores on the Revised Children's Manifest Anxiety Scale (RCMSAS) indicate greater anxiety; and higher scores on the Children's Nowicki-Strickland Internal-External Control Scale (CNSIECS-A) indicate more externality.

Table 3.

Eigenvalues and eigenvalue differences for the initial ULS factor solution of the CRISEE

Factors	Eigenvalues	Eigenvalue Differences	Ratio of Eigenvalue Differences
1	22.62	13.86 (1 vs 2)	4.92 (1&2/2&3)
2	8.76	2.82 (2 vs 3)	1.50 (2&3/3&4)
3	5.94	1.87 (3 vs 4)	2.46 (3&4/4&5)
4	4.07	0.76 (4 vs 5)	0.66 (4&5/5&6)
5	3.32	1.16 (5 vs 6)	2.90 (5&6/6&7)
6	2.15	0.40 (6 vs 7)	3.63 (6&7/7&8)
7	1.75	0.11 (7 vs 8)	0.69 (7&8/8&9)
8	1.64	0.16 (8 vs 9)	0.68 (8&9/9&10)
9	1.48	0.07 (9 vs 10)	
10	1.41		

Note. Numerals within parentheses represents the respective order of the eigenvalues.

Table 4

Promax rotated factor loadings for CRISEE items

	Paraphrased Items	Scale	F1	F2	F3	F4	F5
1	very good student	AC	.15	.22	-.12	**.43**	.31
2	belong in my family	FS	.02	.03	.03	-.13	**.84**
3	parents praise for doing well	FS	.00	.03	.02	.21	**.63**
4	misbehave in school	BC	**.67**	-.07	-.15	.31	.02
5	do what my parents expect	RE	--	--	--	--	--
6	keep feelings to myself	SC	-.07	-.08	**.44**	.01	.39
7	classmates are good to me	PA	.12	**.60**	-.09	.12	.06
8	smarter than most students	AC	-.05	.00	.18	**.63**	-.13
9	students like the way I look	PA	-.28	**.74**	.08	.28	.03
10	afraid to tell people what I think	SC	-.06	.04	**.73**	.01	.05
11	sometimes hit someone	BC	**.56**	-.01	-.08	.02	.14
12	hide my true feelings	SC	-.05	-.07	**.72**	.05	.21
13	frequently tell lies	BC	**.44**	-.11	.22	.20	.02
14	use time better than most	AC	-.01	-.05	.05	**.46**	.23
15	students like to talk to me	PA	-.30	**.80**	-.05	.16	.18
16	do fun things with my parents	FS	-.06	-.05	-.02	.04	**.84**
17	do what my teachers expect	RE	--	--	--	--	--
18	spend time with parents	FS	-.01	-.04	.10	.07	**.78**
19	get into fights	BC	**.79**	-.04	-.16	.12	-.01
20	not as smart as most students	AC	.13	-.00	.38	**.44**	-.14
21	am shy	SC	-.19	.04	**.52**	.07	-.03
22	frequently get angry	BC	**.53**	-.04	.26	.18	-.05
23	can talk to my family	FS	.01	-.02	.12	.03	**.72**
24	afraid I will say the wrong thing	SC	.04	-.02	**.71**	.16	-.11
25	frequently behave badly	BC	**.69**	-.10	-.01	.32	-.03
26	plan my work well	AC	.09	.19	-.10	**.49**	.17
27	feel very safe at home	FS	.10	.27	-.13	.00	**.43**
28	worry people will be angry	SC	-.00	.10	**.57**	.01	.00
29.	students tease me about looks	PA	.09	**.62**	.17	-.07	-.06

(table continues)

	Paraphrased Items	Scale	F1	F2	F3	F4	F5
30	get work done before others	AC	-.06	-.02	.10	**.64**	-.01
31	bothers to tell feelings	SC	-.04	-.01	**.72**	.01	.10
32	try to do what teachers want	RE	--	--	--	--	--
33	parents help with homework	FS	.03	-.03	-.03	.06	**.71**
34	turn in school work when due	AC	.22	-.06	.02	**.76**	-.01
35	want family to love me more	FS	.11	.04	**.44**	-.12	.26
36	get things finished on time	AC	.11	.02	.03	**.72**	.10
37	trouble talking about feelings	SC	-.01	.00	**.75**	.05	.12
38	frequently break rules	BC	**.69**	-.17	.01	.27	.04
39	cannot keep mind on work	AC	.33	-.05	.21	.32	.13
40	have temper tantrums	BC	**.54**	-.04	.24	.09	-.12
41	other students treat me fairly	PA	-.03	**.67**	-.14	.02	.09
42	problems at home	FS	.35	.07	.11	-.14	**.43**
43	do not have many friends	PA	-.02	**.50**	.27	-.00	-.02
44	do school work very well	AC	.15	.17	-.11	**.69**	.13
45	lose control when upset	BC	**.60**	.04	.20	.07	-.05
46	afraid to ask for what I want	SC	-.01	.08	**.69**	.04	-.07
47	correct my mistakes	RE	--	--	--	--	--
48	class work is done on time	AC	.20	.05	-.05	**.77**	.02
49	talk back to teachers	BC	**.72**	-.21	-.13	.19	.04
50	afraid to try new things	SC	.19	.14	.51	.15	-.02
51	people think I look good	PA	-.34	**.70**	.13	.31	.02
52	afraid I will fail this grade	AC	.26	.01	.37	.34	-.05
53	parent(s) read to me	FS	.03	-.11	.15	.21	.37
54	wanted more friends at school	PA	-.02	.38	.37	-.03	-.05
55	do the work I am told to do	RE	--	--	--	--	--
56	do anything for people to like me	SC	.23	.21	.38	-.09	-.12
57	parents listened worried	FS	-.05	.03	.03	.04	**.76**
58	yell at people when angry	BC	**.52**	-.07	.07	.10	.02
59	liked by most students at school	PA	-.24	**.82**	-.01	.23	.07
60	want my family to help me more	FS	.16	.03	**.43**	-.07	.26
61	hard to make friends	PA	.14	**.56**	.30	-.03	-.15

(table continues)

	Paraphrased Items	Scale	F1	F2	F3	F4	F5
62	more than five years old	VC*	--	--	--	--	--
63	throw things when angry	BC	**.61**	.03	.10	.10	-.02
64	students treat me fairly	SC	.26	.25	**.44**	.00	-.04
65	passed the first grade	VC*	--	--	--	--	--
66	not easy for me to make friends	PA	**.43**	.06	.19	.05	.30
67	I watch TV or play	RE	--	--	--	--	--
68	get into much trouble	BC	**.78**	-.04	-.10	.27	.02
69	try hard to please my parents	RE	--	--	--	--	--
70	students make fun of me	PA	.15	**.70**	.12	-.15	-.02
71	talk to parents about problems	FS	-.09	.01	.06	.14	**.72**
72	know answer in class	AC	.06	.06	.07	**.61**	.03
73	do homework	RE	--	--	--	--	--
74	pick on students	BC	**.66**	.03	-.09	-.02	.05
75	try to avoid doing work at home	RE	--	--	--	--	--
76	keep thoughts to myself	SC	-.05	-.11	**.70**	-.02	.23
77	liked by popular students	PA	-.30	**.66**	.10	.27	-.09
78	frequently feel nervous	SC	.13	.16	**.56**	.05	-.09
79	get good grades on homework	AC	.20	.20	-.17	**.52**	.16
80	get along well with other people	PA	.10	**.69**	-.22	.19	.06
81	try to get work done	RE	--	--	--	--	--
82	classroom is too crowded	ST	**.40**	.12	.08	-.18	.01
83	frequently lose at games/ sports	ST	.08	.24	.36	-.02	-.07
84	students take things from me	ST	.29	**.55**	.09	-.18	-.07
85	much fighting in my school	ST	**.46**	.11	.01	-.03	-.11
86	students try to hurt me	ST	**.44**	**.57**	-.01	-.27	.00
87	much crime in my neighborhood	ST	**.54**	.11	-.04	.02	.03
88	moved during the last year	ST	.33	-.05	.10	-.13	-.02
89	frequently picked last on a team	ST	.15	**.60**	.16	-.12	-.12
90	left alone a lot	ST	.26	.33	.13	-.13	.20
91	live with mother and father	ST	-.07	.02	.06	-.10	-.15
92	people frequently hit me	ST	**.56**	**.43**	-.02	-.30	.10
93	people often yell at me	ST	**.41**	.31	.10	-.20	.24

(table continues)

Paraphrased Items		Scale	F1	F2	F3	F4	F5
94	much fighting in neighborhood	ST	**.65**	.05	-.02	.02	-.03
95	students tease me	ST	.18	**.71**	.11	-.14	-.07
96	have scary dreams	ST	.29	.14	.23	-.12	-.05
97	was held back a grade	ST	.35	.12	.04	.04	.02
98	sent to the principal a lot	ST	**.80**	.01	-.12	.10	-.05
99	frequently get lost	ST	.38	.12	.26	-.11	-.10

Note. Salient loadings are in boldface. F1 = Factor 1; F2 = Factor 2; F3 = Factor 3; F4 = Factor 4; F5 = Factor 5; Validity check items indicated by VC. Items on the RE (Responsibility Scale) were not included in the factor analysis.

Table 5

Inter-factor correlations for the CRISEE

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	1.00				
Factor 2	.28	1.00			
Factor 3	.34	.45	1.00		
Factor 4	.26	.02	.07	1.00	
Factor 5	.34	.29	.28	.40	1.00

Table 6
Factor Based Scales of the CRISEE

Factor Based Scales	Reliability	Items
AC	.83	1, 8, 14, 20, 26, 30, 34, 36, 44, 48, 72, 79,
SC	.85	6, 10, 12, 21, 24, 28, 31, 35, 37, 46, 60, 64, 76, 78,
FS	.82	2, 3, 16, 18, 23, 27, 33, 42, 57, 71
BC\ST	.88	4,11, 13, 19, 22, 25, 38, 40, 45, 49, 58, 63, 66, 68, 74, 82, 85, 87, 93, 94, 98
PA\ST	.86	7, 9, 15, 29, 41, 43, 51, 59, 61, 70, 77, 80, 84,86 89,92, 95

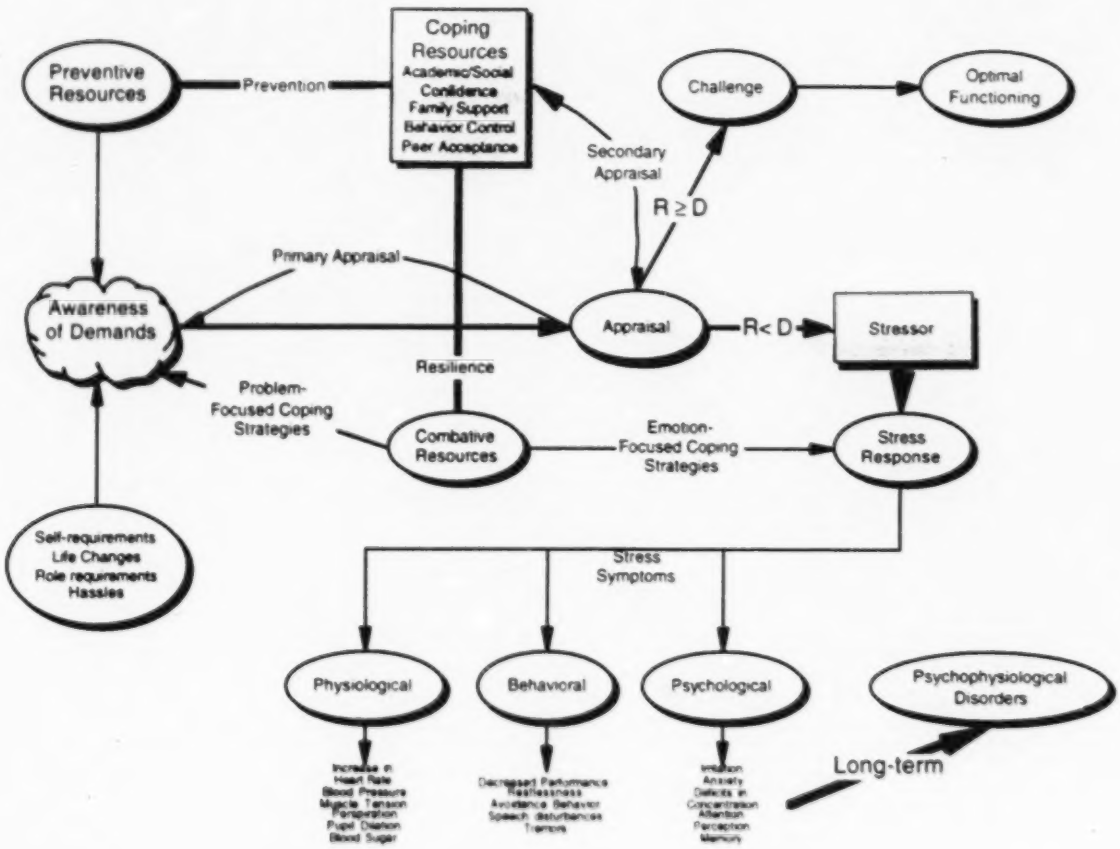
Table 7

Statistically significant factors for MANOVA by grade level

		Scale		
Grade		Factor 2	Factor 3	Factor 4
6				
	M	11.08	8.62	7.96
	SD	3.75	4.15	3.50
7				
	M	11.80	9.05	7.63
	SD	3.48	4.14	3.44
8				
	M	11.91	9.29	7.39
	SD	3.18	4.10	3.42

Note. Post-hoc Tukey's HSD tests revealed that for Factor 2, scores for Grade 6 were significantly different from scores for Grade 7 and for Grade 8. Tukey's HSD tests revealed that for Factors 3 and 4, scores for Grade 6 were significantly different from Grade 8.

Figure 1
Hypothesized Stress Model



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